

Comparison of Diacerein versus Chondroitin Sulphate and Glucosamine in first Metapharyngeal Joint in Osteoarthritis

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ABSTRACT

Background: Osteoarthritis (OA) is a common degenerative disease of joints among adult population. The present study was conducted to compare diacerein versus chondroitin sulphate with glucosamine in first metapharyngeal joint in OA. **Aims and Objective:** The aim was to evaluate the comparative efficacy of chondroitin sulphate with Glucosamine over Diacerein in OA of first metapharyngeal joint. **Methods:** A randomized open label, intention to treat, comparative study was conducted over a period of six months among sixty patients with OA of first metapharyngeal joint in both the genders. Group I (n=30) received tablet chondroitin sulphate 400 mg with 500 mg glucosamine thrice a day and group II (n=30) patients received cap diacerein 50 mg twice a day orally. Pain was recorded using visual analogue scale (VAS). **Results:** All the sixty patients completed the study. Chondroitin sulphate with glucosamine was statistically better than diacerein in reducing pain at 3 & 6 months ($p<0.05$). **Conclusion:** Chondroitin sulphate with glucosamine appears to be more effective on long term basis in reducing pain of OA. Furthermore they appear to be equally safe and well tolerated in patients of OA.

Keywords: Chondroitin sulfate, Glucosamine, Diacerein, Osteoarthritis, Pain.

INTRODUCTION

Osteoarthritis (OA) is a common degenerative disease of joints among adult population. It is found that osteoarthritis is the common reason of disability worldwide. It has high morbidity and mortality especially in older people. It is quite common in females as compared to males.^[1] Various treatment modalities for osteoarthritis of joints have been invented. Non-steroidal anti-inflammatory drugs (NSAIDs) such as cyclooxygenase 2 inhibitors are highly recommended in such cases.^[2] NSAIDs are considered to be first-line of drugs for OA. The incidence of stroke and heart attacks is more with NSAIDs, hence it advisable to use it carefully in OA patients with underlying cardiovascular disease.^[3]

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Patented crystalline glucosamine sulfate (pCGS) and diacerein are commonly used for treatment of symptomatic mild to moderate OA to relieve pain.^[4] These drugs are efficient in preventing loss of cartilage and delaying joint destruction. pCGS is found naturally in the human body, acting as one of the building blocks of cartilage and a precursor for glycosaminoglycan, a major component of joint cartilage. Diacerein works by inhibiting interleukin-1, one of the first cytokines that induces fever, controls lymphocytes, increases the number of bone marrow cells, and causes degeneration of the bone joint.^[5]

Chondroitin sulphate (CS) is a major component of the extracellular matrix (ECM) of many connective tissues, including cartilage, bone, skin, ligaments and tendons. CS, as a natural component of the ECM, is a sulfated glycosaminoglycan (GAG) composed of a long unbranched polysaccharide chain with a repeating disaccharide structure of N-acetylgalactosamine and glucuronic acid.^[6] The present study was conducted to compare diacerein versus chondroitin sulphate and glucosamine in first metapharyngeal joint in OA.

MATERIALS AND METHODS

A randomized, open label, intention to treat, comparative study was conducted in the Department of Orthopaedics in collaboration with the Department of Pharmacology, Government Medical College(GMC), Jammu, over a period of six months. The study was undertaken after prior approval from the Institutional Ethics Committee, GMC, Jammu. A verbal informed consent was obtained from the patients

Patient data such as name, age, gender etc. was recorded in case history performa. A thorough clinical examination was done in all patients. Patients were randomly divided into two groups of thirty each. Group I received tablet chondroitin sulphate 400 mg with glucosamine 500 mg thrice a day and group II patients received cap diacerein 50 mg twice a day orally. Patients underwent anteroposterior and lateral hand radiographs. Pain was recorded using visual analogue scale (VAS). The patients were instructed not to use any other analgesic except those recommended. Patients were advised to come regularly for follow up on 1 month, 3rd month and 6th month. At every visit, VAS was recorded. Results thus obtained from all patients were tabulated and subjected to statistical analysis. P value was regarded significant at 0.05.

RESULTS

All the sixty patients recruited completed the study with thirty each in both the arms. The demographic details of these patients were comparable. Group I was given the drug combination of tablet chondroitin sulphate 400 mg with Glucosamine500 mg thrice daily whereas group II received cap Diacerein 50 mg twice daily. Both the drugs were given orally with food. [Table 1]

Table 1: Distribution of patients

Groups	Group I	Group II
Agent	400 mg chondroitin sulfate and 500 mg glucosamine	50 mg diacerein
Number	30	30

Table 2: Baseline characteristics

Parameters	Group I	Group II	P value
Weight, Kg	62.5	64.2	0.91
Height, cm	162.4	158.7	0.82
BMI, Kg/m ²	28.3	27.5	0.94
Duration of disease, years	3.5	3.7	0.95
Diabetes	7	8	0.71
Hypertension	4	5	0.73

[Table 2] shows that mean weight was 62.5 kg & 64.2 kg; height was 162.4 cms & 158.7 cms and BMI was 28.3 Kg/m² & 27.5 Kg/m² in group I & II patients. The mean duration of disease in group I was 3.5 years and in group II it was 3.7 years. Underlying diseases such as diabetes was present in seven patients in group I and eight patients in group

II whereas hypertension was seen in four patients in group I and in five patients in group II. The difference was non- significant (P> 0.05).

Table 3: Comparison of VAS in both groups

VAS	Group I	Group II	P value
Initial	6.5	6.3	0.91
1 month	4.5	4.8	0.94
3 months	2.1	3.5	0.05
6 months	1.4	2.6	0.01

[Table 3, Figure 1]shows that VAS was 6.5 & 6.3; 4.5 & 4.8; 2.1 & 3.5 and 1.4 & 2.6 in groups I & II at zero day followed by one, three and six months. The difference was significant at 3 and 6months.

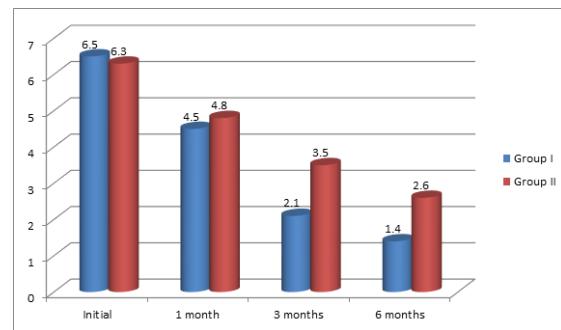


Figure 1: Comparison of VAS in both groups

DISCUSSION

Osteoarthritis (OA) is a chronic degenerative disease of joints of dynamic pathology with multifactorial etiology.^[7] It involves progressive softening and loss of articular cartilage, subchondral bone sclerosis, cyst formation and the development of osteophytes.^[8] OA of knee accounts for more dependence in walking, stair climbing and other lower-extremity tasks than any other disease.^[9] The present study was conducted to compare diacerein versus chondroitin sulphate and glucosamine in first metatarsophalangeal joint in OA. Study done by Mirulalini et al,^[10] assessed the efficacy and safety of chondroitin sulfate with glucosamine versus diacerein in seventy five patients of OA knee. Group A patients received tablet Chondroitin Sulphate (400 mg) with glucosamine (500 mg) combination thrice a day and group B patients were given capsule Diacerein 50 mg, twice a day orally both after food. They were assessed for pain using visual analogue scale (VAS) from baseline and followed-up at 3, 12, 24 weeks. At 24 weeks there was reduction in VAS from 6.76 to 1.96 (71.01%) in Group A and from 6.8 to 3.53 (48.09%) in Group B. There was significant difference between the groups with Group A significant over Group B in VAS. Thus, the effect of drug in Group A on pain reduction was greater than Group B.

Another study done by Kongtharvonskul et al,^[11] showed the better efficacy of pCGS over diacerein in the pain management of OA. They enrolled 148

patients in the study; mean age and body mass index were 60 years and 28.1 kg/m² respectively. Mean VAS and minimal joint space width at baseline was 5.1 & 2.5mm, respectively. The mean VAS values measured at 24 weeks were 2.97 & 2.88 in the pCGS plus diacerein and pCGS plus placebo groups, respectively. The estimated mean difference was 0.09, which was not statistically significant. In addition, the mean WOMAC total, pain, function, and stiffness scores for both groups were not significantly different, with corresponding means of 48.59; 12.02; 32.74 & 3.85 for the pCGS plus diacerein group and 48.69; 11.76; 32.47 & 4.16 for the pCGS plus placebo group.

Review of literature revealed the similar results regarding the effects of the mentioned drugs. As there is no cure for OA, treatments currently focus on management of symptoms.^[12]

Such an observation could be of clinical importance as there are many pain management therapies and are gaining acceptance in clinical practice. OA is a very common disorder and may require long term use of analgesic therapy and it becomes of utmost importance that patients remain independent and stay active.

The risk of diarrhea and dyspepsia was very similar between the two groups, with risk ratios of 1.03 and 0.91 respectively.

The difference in VAS was significant at 3 and 6 months in group I receiving pCGS with CS showing that diacerein was not much promising in pain management of OA. Osteoarthritis is a commonly occurring inflammatory disease involving knee joints commonly. In our study involvement of first metapharyngeal joint was common.

The current study suffers from the limitations of being a short study with lesser number of patients, short follow up and not a placebo controlled trial. It is possible that the results may be more beneficial with longterm use of these drugs; however in 25% of patients there was recurrence of pain within three months of withdrawal of the drugs.

CONCLUSION

The results of present study underscore the potential of Chondroitin Sulphate with Glucosamine over Diacerein which is a positive indicator for future use of these drugs in the pain management of Osteoarthritis.

REFERENCES

- Cross M, Smith E, Hoy D, Nolte S, Ackerman I, Fransen M, et al. The global burden of hip and knee osteoarthritis: Estimates from the global burden of disease 2010 study. *Ann Rheum Dis* 2014;73(7):1323-30.
- McAlindon TE, Bannuru RR, Sullivan MC, Arden NK, Berenbaum F, Bierma-Zeinstra SM et al. OARSI guidelines

for the non surgical management of knee osteoarthritis. *Osteoarthritis Cartilage* 2014;22(3):363-88.

- Ullal SD, Narendranath S, Kamath RK, Pai MR, Kamath SU, Amarnath DS. Prescribing pattern for osteoarthritis in a tertiary care hospital. *J Clin Diagn Res* 2010;4(3):2421-26.
- Huskisson EC. Measurement of pain. *Lancet* 1974;2(7889):1127-31.
- Srikanth VK, Fryer JL, Zhai G, Winzenberg TM, Hosmer D, Jones G. A meta-analysis of sex differences prevalence, incidence and severity of osteoarthritis. *Osteoarthritis Cartilage* 2005;13(9):769-81.
- Tukker A, Visscher TL, Picavet HS. Overweight and health problems of the lower extremities: Osteoarthritis, pain and disability. *Public Health Nutr* 2009;12(3):359-68.
- Hochberg MC, Altman RD, April KT, Benkhalti M, Guyatt G, McGowan J, et al. American College of Rheumatology 2012 recommendations for the use of non-pharmacologic and pharmacologic therapies in osteoarthritis of the hand, hip, and knee. *Arthritis Care Res (Hoboken)* 2012;64(4):465-74.
- Neil A Segal, James Torner, David Felson, Jingbo Niu, Leena Sharma, Cora E. Lewis, et al.: The Effect of Thigh Strength on Incident Radiographic and Symptomatic Knee Osteoarthritis in the Multicenter Osteoarthritis (MOST) Study, *Arthritis Rheum*. 2009 September 15; 61: 1210-1217.
- Kaufman KR, Hughes C, Morrey BF, Morrey M, An KN. Gait characteristics of patients with knee osteoarthritis. *J Biomech*. 2001; 34: 907-915.
- Mirunalini R, Chandrasekaran M, Manimekalai K. Efficacy of chondroitin sulfate with glucosamine versus diacerein in grade ii and iii osteoarthritis knee: a randomized comparative study. *Asian J Pharm Clin Res*. 2015;8:42-44.
- Kongtharvonskul J, Woratanarat P, McEvoy M, Attia J, Wongsak S, Kawinwonggowit V, Thakkinstian A. Efficacy of glucosamine plus diacerein versus monotherapy of glucosamine: a double-blind, parallel randomized clinical trial. *Arthritis research & therapy*. 2016 Dec 1;18(1):233.
- Hafez AR, Alenazi AM, Kachanathu SJ, Alroumi AM, Mohamed ES. Knee osteoarthritis: A review of literature. *Phys Med Rehabil Int*. 2014;1(5):8.

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